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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,226	06/07/2002	Yves Reignoux	09669/005001	7556

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EXAMINER	
GEBREMARIAM, SAMUEL A	
ART UNIT	**PAPER NUMBER**
2811	

DATE MAILED: 03/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/890,226	REIGNOUX ET AL
	Examiner	Art Unit
	Samuel A. Gebremariam	2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/8/05 has been entered. An action on the RCE follows.

a. The amendment filed on 12/8/05 has been entered.

Claim Objections

2. Claims 1-3 and 5 are objected to because of the following informalities: The dimensions "pm" used to describe the thickness of the chip appear to have a typographical error. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiar et al. US patent No. 5,422,435, in view of Bertin et al, US patent No. 5,532,519.

Regarding claim 1, Takiar teaches (fig. 13) an integrated circuit device, characterized in that it comprises: an active chip (248) of a semiconductor material

comprising an electrical circuit, the active chip having an active face (top surface of 248) provided with a plurality of electrical connection terminals (refer to fig. 13) and a second face (bottom surface of 248), and a complementary chip (250) having a first face (bottom surface of 250) attached to the active face of the active chip, a second face (top surface of 250) and a side surface (side surface of 250), wherein the complimentary chip has a plurality of recesses/cutaway (254 and refer to col. 10, lines 9-17) each recess extending through the whole thickness of the complimentary chip (fig. 13) and extending from above a contact terminal to the side surface, wherein each recess extends laterally inward from a perimeter of the complimentary chip (refer to fig. 13).

Takiar does not explicitly teach the complementary chip has a larger thickness than the active chip wherein the active chip has a thickness of less than 100 μm.

Bertin teaches (fig. 6) where chip structure (28) has a thickness in the range of 50-100 μm (col. 6, lines 11-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the thickness of the active chip and complementary chip as taught by Bertin in the structure of Takiar in order to improve the packing density of the package. It would also have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the thickness configuration of the stacked chip as claimed in the structure of Takiar and Bertin in order to improve the packing density of the package.

Furthermore parameters such as thickness and width in the art of semiconductor manufacturing process are subject to routine experimentation and optimization to achieve the desired device characterization during fabrication.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust thickness of the active chip and complimentary chip of Takiar structure as claimed in order to improve the packing density of the device.

Regarding claims 2 and 3, Takiar teaches substantially the entire claimed structure of claim 1 above including the thickness of the active layer ranges from 5 to 50 μm and the thickness of the complementary layer ranges from 100 to 200μm (refer to Bertin, Bertin teaches stacked chip structure within this range, col. 6, lines 11-22).

Furthermore parameters such as thickness and width in the art of semiconductor manufacturing process are subject to routine experimentation and optimization to achieve the desired device quality during fabrication.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the thickness of the active chip and complementary chip in the structure of Takiar within the range as claimed in order to form a densely packaged device.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takiar, Bertin and in view of Tada US patent No. 5,155,068.

Regarding claim 4, Takiar teaches substantially the entire claimed structure of claim 1 above except explicitly stating that the complementary chip is formed with the same semiconductor material as the active chip.

Tada teaches forming an LSI chip (40) and forming complementary chip (4a) on the active chip (4b) made of silicon. Furthermore LSI chips are routinely formed of silicon material.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same material to form both the complimentary chip and active chip as claimed in the structure of Takiar in order to form a densely packaged device.

6. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiar, Bertin and in view admitted prior art.

Regarding claim 5, Takiar teaches substantially the entire claimed structure of claim 1 above except explicitly stating an insulating substrate having an outer face provided with outer electrical contact pads and an inner face, the second face of the active chip being attached to the substrate inner face.

Admitted prior art teaches an electronic unit for smart card comprising (fig. 1) an insulating substrate (18) having an outer face provided with outer electrical contact pads and an inner face (upper surface of 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the insulating substrate taught by admitted prior art in the structure of Takiar in order to provide isolation from other integrated circuits.

Furthermore the combined structure of Takiar, Bertin and admitted prior art would inherently have the second face of the active chip being attached to the substrate inner face, and a plurality of electrical leads, each lead having a first end connected to a contact terminal and a second end connected to an outer contact pad and lying entirely between the plane containing the second face of the complementary chip and the insulating substrate (fig. 1 of admitted prior art).

Regarding claim 6, Takiar teaches (fig. 1, admitted prior art) substantially the entire claimed structure of claim 1 above including the insulating substrate includes windows (26, APA), each window being disposed above an outer electric contact pad (where lead 24 is connected).

Regarding claim 7, Takiar teaches (fig. 1, admitted prior art) substantially the entire claimed structure of claim 1 above including an electronic unit according to claim 5.

Response to Arguments

7. Applicant's arguments with respect to claims 1-7 have been considered but are persuasive. Applicant argues Takiar fails to disclose recesses in a complimentary chip, which extend laterally inward from a perimeter of the complimentary chip.

Embodiment of fig. 13 clearly teaches the above limitation as claimed, where the complimentary chip (250) is formed with a recess/cutaway structure that spans the thickness of the complimentary chip and that extend laterally inward from a perimeter of the complimentary chip.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Gebremariam whose telephone number is (571)-272-1653. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAG
March 1, 2006

EDDIE LEE
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